AMENDMENTS TO THE CLAIMS

1.(currently amended): A computer-based communication system implementing circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), said system comprising:

a circuit-data-receiver to receive circuit data; and

a CE-to-IP function which further comprises comprising:

a packetizer to pack said circuit data [[circuit-data]] into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add [[the]] layer-2 operations, [[and]] wherein said IP network transmits said encapsulated data packets, and wherein said circuit data includes a fractional T1 or fractional E1 transfer stream and where only time slots carrying information are packetized and carried over the IP network.

2-4.(cancelled):

5.(currently amended): A computer-based communication system implementing circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), said system comprising: as per claim 3;

a circuit-data-receiver to receive circuit data from a T1/E1 or T3/E3 stream; and

a CE-to-IP function further comprising:

a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

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a layer-2 incorporator to add layer-2 operations,

wherein said packetizer packs data into packets via collecting ~~relevant~~ only time

slots (TSs) carrying information from each TDM frame, and

wherein said IP network transmits said encapsulated data packets.

6-9.(cancelled):

10.(currently amended):   A computer-based communication system implementing

circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP),

said system comprising: ~~as per claim 8,~~

a circuit-data-receiver to receive circuit data from a virtual container or VC-12

(SDH);

a SDH framer;

a High Order Path Adaptation function; and

a CE-to-IP function further comprising:

a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add layer-2 operations,

wherein said packetizer further including ~~comprises~~ a packet transmit function

that generates no packets when a loss of pointer is detected.

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11.(currently amended): A computer-based communication system implementing circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), said system comprising: as per claim 8,

a circuit-data-receiver to receive circuit data from a virtual container or VC-12 (SDH);

a SDH framer;

a High Order Path Adaptation (HPA) function; and

a CE-to-IP function further comprising:

a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add layer-2 operations,

wherein said packetizer further includes comprises a packet transmit function that generates a special control packet when the HPA generates an error.

12.(currently amended): [[A]] The computer-based communication system implementing circuit emulation service over an Internet Protocol network (CES over IP, CESOIP), as per claim 11 [[8]], wherein said packetizer further includes comprises a packet transmit function that ignores HPA indications and transfers all data transparently.

13.(currently amended): A computer-based communication system implementing circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), said system comprising: as per claim 8,

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a circuit-data-receiver to receive circuit data from a virtual container or VC-12

(SDH);

a SDH framer;

a High Order Path Adaptation function; and

a CE-to-IP function further comprising:

a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add layer-2 operations,

wherein said packetizer further includes comprises a packet receive function that

detects loss or reception of erroneous UDP/RTP packet.

14.(currently amended): [[A]] The computer-based communication system

implementing circuit emulation service over an Internet Protocol network (CES over IP,

CESOIP), as per claim 13, wherein said erroneous UDP/RTP packet is an UDP checksum error.

15.(currently amended): A computer-based communication system implementing

circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP),

said system comprising: as per claim 8,

a circuit-data-receiver to receive circuit data from a virtual container or VC-12

(SDH);

a SDH framer;

a High Order Path Adaptation function; and

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a CE-to-IP function further comprising:

a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add layer-2 operations,

wherein said packetizer further includes comprises a packet receive function that

detects a loss of three consecutive VC-12 frames.

16.(currently amended):   A computer-based communication system implementing

circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP),

said system comprising: as per claim 8,

a circuit-data-receiver to receive circuit data from a virtual container or VC-12

(SDH);

a SDH framer;

a High Order Path Adaptation function; and

a CE-to-IP function further comprising:

a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add layer-2 operations,

wherein said packetizer further includes comprises a packet receive function

which outputs a AIS signal upon receipt of a control packet.

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17.(currently amended): [[A]] The computer-based communication system implementing circuit emulation service over an Internet Protocol network (CES over IP, CESOIP), as per claim 16 [[8]], wherein said packetizer further includes comprises a packet receive function which detects error as defined in G.826.

18.(cancelled)

19.(currently amended): [[A]] The computer-based communication system implementing circuit emulation service over an Internet Protocol network (CES over IP, CESOIP), as per claim 1, wherein said step of encapsulating data packets involves encapsulation with any of the following headers: RTP, UDP, and IP headers.

20.(currently amended): [[A]] The computer-based communication system implementing circuit emulation service over an Internet Protocol network (CES over IP, CESOIP), as per claim 1, wherein said system is implemented across networks comprising any of LANs, WANs, cellular, Internet or Web based networks.

21.(currently amended): A computer-based communication system implementing circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), as per claim 1, said system comprising:

    a circuit-data-receiver to receive circuit data; and

    a CE-to-IP function further comprising:

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a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add layer-2 operations,

wherein said data packet further ~~comprises~~ comprising:

a layer-2 header for storing layer-2 header information;

an IP field for storing IP header information;

an UDP header for storing UDP header information;

a RTP header for storing RTP header information;

a data field for storing data, and

an optional trailer field, and wherein

said IP network transmits said encapsulated data packets.

22.(currently amended): [[A]] The computer-based communication system ~~implementing circuit emulation service over an Internet Protocol network (CES over IP, CESOIP),~~ as per claim 1, wherein said system further comprises a clock-recoverer to recover the circuit emulation clock across the packet network.

23.(currently amended): A computer-based communication system implementing circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), ~~as per claim 22,~~ said system comprising:

a circuit-data-receiver to receive circuit data;

a CE-to-IP function further comprising:

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a packetizer to pack said circuit data into data packets;

an encapsulator to encapsulate said data packets with headers; and

a layer-2 incorporator to add layer-2 operations; and

~~wherein said~~ a clock-recoverer further ~~comprises~~ comprising:

a receiver which receives the RTP packet;

a sampler which samples a local time stamp and a buffer pointer position;

a time-stamp-estimator which tests the sync number and calculates the estimated time stamp;

an error-calculator which calculates the error;

an inserter that inserts into array said calculated error in the right sync position according to right sync number;

a 2T-integral-calualtor which calculates the new integral on 2T by adding the error to the integral;

a T-integral-calculator which calculates the new integral on T by adding half of said error from said array;

a minimum-packet-comparator which maintains a continuous flow of RTP packets if minimum number of packets are reached;

a ratio-calculator that calculates the ratio of said integral on 2T and said integral on T;

a ratio-range-checker that checks to see if said ratio is between 1.5 and 3;

an angle-calculator which calculates the angle using linear regression;

a clock adjuster which adjusts clock according to said angle, and

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a resetter which resets all counters, starts new windows, and start

receiving RTP packets.

24.(currently amended): A computer-based method implementing circuit emulation

service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), comprising the

following steps:

     receiving circuit data of a fractional T1 or fractional E1 transfer stream;

     passing said circuit data through a CE-to-IP function, which further includes the

steps of: comprises

         packing data into data packets;

         encapsulating said data packets with headers; and

         incorporating said data packets with layer-2 headers, and

     transmitting said encapsulated and layer-2 incorporated data packets via a IP

network, wherein

     only time slots carrying information are packed into data packets and carried over

the IP network.

25-27.(cancelled):

28.(currently amended): [[A]] The computer-based method implementing circuit

emulation service over an Internet Protocol network (CES over IP, CESOIP), as per claim 24,

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wherein said step of encapsulating data packets involves encapsulation with any of the following headers: RTP, UDP, and IP headers.

29.(currently amended): [[A]] The computer-based method ~~implementing circuit emulation service over an Internet Protocol network (CES over IP, CESOIP)~~, as per claim 24, wherein said method further includes ~~comprises~~ the additional step of passing the data packets through a clock recovery function to recover the circuit emulation clock across the packet network.

30.(currently amended): A computer-based method implementing circuit emulation service (CE) over an Internet Protocol (IP) network (CES over IP, CESOIP), comprising the steps of: ~~as per claim 29,~~

    receiving circuit data;

    passing said circuit data through a CE-to-IP function, further comprising the steps of:

        packing data into data packets;

        encapsulating said data packets with headers; and

        incorporating said data packets with layer-2 headers;

    transmitting said encapsulated and layer-2 incorporated data packets via a IP network; and

        passing the data packets through a clock recovery function further comprising the steps of:

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~~wherein said step of passing the received data packets through a clock recovery~~

~~function further comprises:~~

receiving the RTP packet;

sampling a local time stamp and a buffer pointer position;

testing the sync number and calculating the estimated time stamp;

calculating the error;

inserting into array said calculated error in the right sync position

according to right sync number;

calculating the new integral on 2T by adding the error to the integral;

calculating the new integral on T by adding half of said error from said

array;

receiving RTP packets again if minimum number of packets are reached;

calculating the ratio of integral on 2T and the integral on T;

checking to see if said ratio is between 1.5 and 3;

calculating the angle by using linear regression;

adjusting clock according to said angle, and

resetting all counters, start new windows, and start receiving RTP packets..

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